March 25, 2022

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Re: Arborist Assessment – 61st Ave NE Sidewalk Project

The Watershed Company Reference Number: 211037.2

Dear Nathan:

We are pleased to present the findings of the inventory and assessment for the trees located within the right-of-way (ROW) along 61st Ave NE in Kenmore, WA between NE 190th Street and 62nd Avenue NE. Jake Robertson, an ISA Certified Arborist© with The Watershed Company, visited the subject property on February 21, 2022, to assess trees that may be impacted by the proposed sidewalk replacement project.

This letter summarizes the findings of the study. The following documents are enclosed:

- Annotated Tree Map (provided by the client)
- Tree Inventory Table

Study Area

The study area is located along 61st Ave NE between NE 190th Street and 62nd Avenue NE. The study area spans approximately 0.77 mile and includes the trees rooted within the right-of-way (ROW) that are within proximity of the proposed sidewalk replacement. Single family homes generally border the ROW along with utilities, street signs, and fences. See Figure 1 for site vicinity and project site overview maps.

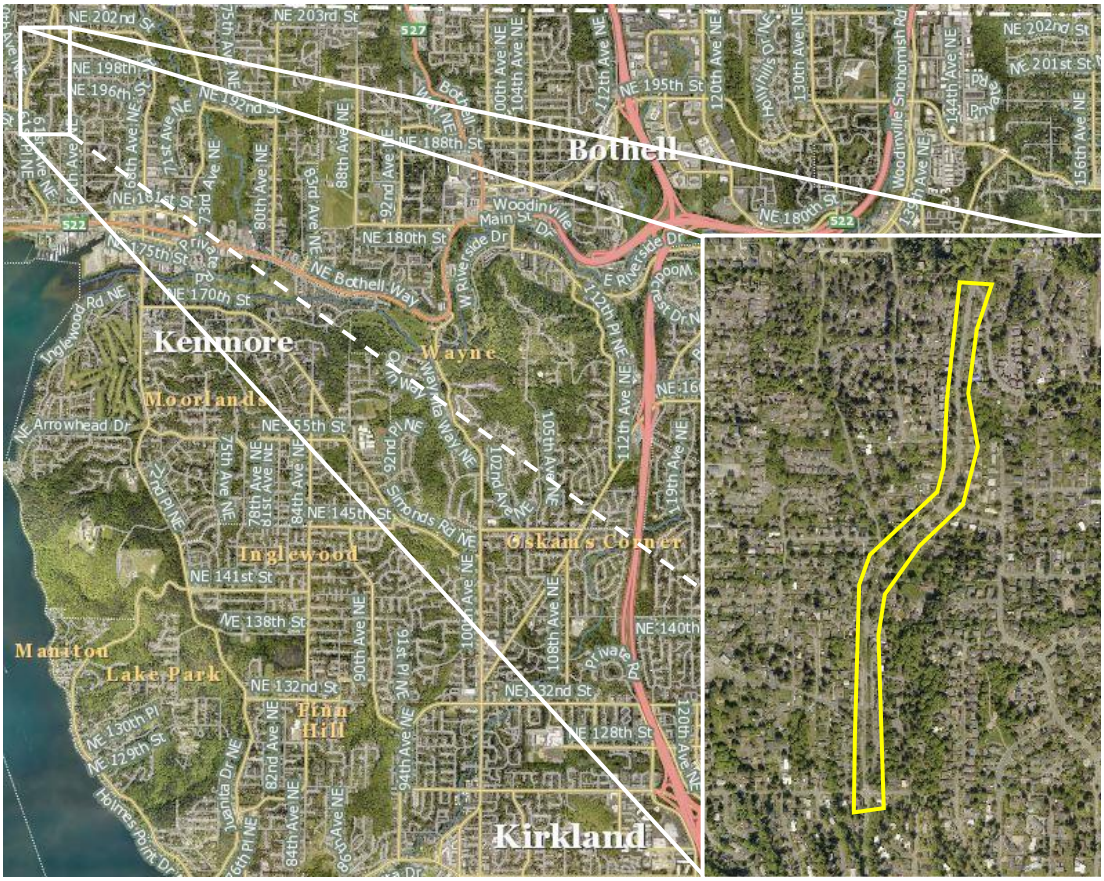


Figure 1. Vicinity map showing the approximate location of the project site and study area (outlined in yellow). (*Images courtesy of King County iMap, 2019*)

Tree Assessment Methods

All significant trees in the study area were identified and assessed in the field using a Level I Visual Assessment according to International Society of Arboriculture (ISA) standards to collect species name (scientific and common), number of stems, diameter, estimated height, crown radius, condition, and general assessment notes.

Only the trees identified on the PDF survey provided by the client were inventoried and collected. Assessed trees were located along the ROW that would be impacted by new sidewalk development and were measured at four-and-a-half-feet above ground level. Each assessed tree was identified using the previous numbering system used by Otak, Inc. in 2017.

Diameter: The diameter at breast height (DBH) of all subject trees was measured at four-and-a-half feet above the ground surface using a graduated metal logger's DBH tape. Methodology for measuring and calculating the diameter of trees with multiple trunks, major leans, or on steep

slopes was done by taking the average of each stem. This followed the outline in the *Guide for Plant Appraisal, 10th Edition*, written by the Council of Tree and Landscape Appraisers (CTLA) and published by International Society of Arboriculture (ISA) (CTLA 2018).

Canopy Radius: Canopy radius, also known as dripline, was measured from the center of each trunk to the outermost branch tips by estimating a vertical line to the ground. For trees with uneven crowns, the average of two opposite radii was estimated.

Critical Root Zone: Critical root zone, also known as CRZ, is the area in which any loss of roots would have a significant impact on tree survival. CRZ is calculated at a rate of one (1) foot per one (1) inch DBH or is the area within the dripline of a tree, whichever is greater.

Height: Tree height was visually estimated.

Condition: A basic Level 1 visual assessment was used to evaluate the health and condition of each tree within the study area in accordance with ISA and CTLA standards. Each tree was given a rating from one through six (Excellent – Dead) as summarized below in Table 1.

Table 1. Assessment of plant condition considers health, structure, and form. Each may be described in rating categories that will be translated into a percent rating. (CTLA 2020)

Rating Category	Condition Components			Percent Rating
	Health	Structure	Form	
Excellent - 1	High vigor and nearly perfect health with little or no twig dieback, discoloration, or defoliation.	Nearly ideal and free of defects.	Nearly ideal for the species. Generally symmetric. Consistent with the intended use.	81% to 100%
Good - 2	Vigor is normal for species. No significant damage due to diseases or pests. Any twig dieback, defoliation, or discoloration is minor.	Well-developed structure. Defects are minor and can be corrected.	Minor asymmetries/deviations from species norm. Mostly consistent with the intended use. Function and aesthetics are not compromised.	61% to 80%
Fair - 3	Reduced vigor. Damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal. Twig dieback, defoliation, discoloration, and/or dead branches may compromise up to 50% of the crown.	A single defect of a significant nature or multiple moderate defects. Defects are not practical to correct or would require multiple treatments over several years.	Major asymmetries/deviations from species norm and/or intended use. Function and/or aesthetics are compromised.	41% to 60%
Poor - 4	Unhealthy and declining in appearance. Poor vigor. Low foliage density and poor foliage color are present. Potentially fatal pest infestation. Extensive twig and/or branch dieback.	A single serious defect or multiple significant defects. Recent change in tree orientation. Observed structural problems cannot be corrected. Failure may occur at any time.	Largely asymmetric/abnormal. Detracts from intended use and/or aesthetics to a significant degree.	21% to 40%
Very Poor - 5	Poor vigor. Appears dying and in the last stages of life. Little live foliage.	Single or multiple severe defects. Failure is probable or imminent.	Visually unappealing. Provides little or no function in the landscape.	6% to 20%
Dead - 6				0% to 5%

Tree Inventory Results

A total of 70 significant trees (Table 2) were assessed within the study area using the aluminum tag numbers #101 – #224. Red maple (*Acer rubrum*) was the most common species identified with 65 individuals. The other species identified were three (3) bitter cherry (*Prunus emarginata*), and one each of Colorado spruce (*Picea pungens*) and western red cedar (*Thuja plicata*), with the latter being the largest inventoried tree at 40.5 inches DBH. Twenty-three of the assessed trees are recommended to be removed (Table 3). A summary of all trees inventoried can be found in the enclosed Tree Inventory Table.

Diameter

Assessed trees range in DBH from 4.8 inches to 40.5 inches. The average diameter is 16.9 inches.

Height

The estimated height of the trees on the project site spans from 15 feet to 70 feet. The average height is 38 feet.

Canopy Radius

The canopy radii of all assessed trees range from 5 feet to 28 feet, with an average radius of 17 feet.

Condition

Most trees (39) are in *Fair* condition, which typically indicates they have minor defects pertaining to the trunk structure or minor canopy dieback. Nineteen are in *Good* condition, which typically indicates they have straight trunks and foliage that would be consistent with healthy forest settings. Nine are in *Poor* condition, which typically indicate that they show significant signs of declining health. Two are in *Excellent* condition, which indicates no defects. One was dead.

Table 2. Summary of inventoried tree species within the ROW.

Scientific Name / Common Name	Number of Trees Inventoried	Avg. Trunk DBH (inches)	Smallest DBH (inches)	Largest DBH (inches)
Acer rubrum (Red maple)	62	17.2	6.4	25.3
Acer rubrum 'Red Sunset' (Red Sunset red maple)	3	7.1	4.8	8.8
Picea pungens (Colorado spruce)	1	18.4	-	-
Prunus emarginata (Bitter cherry)	3	12.4	6.9	16.3
Thuja plicata (Western red cedar)	1	40.5	-	-

Grand Total	**70**			

Assessment

Tree #101

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 22.1 inches and an average canopy radius of 21 feet. This tree is in *Fair* condition and is located in a narrow planting strip as wide as the trunk and it has an uncorrected lean over the road. The sidewalk has been replaced with asphalt which is lifting, cracking, and breaking and is hazardous for pedestrians and unnavigable for wheelchairs and the visually impaired. Pedestrians have been traveling around the uneven sidewalk, further damaging surface roots as well as causing soil compaction. Approximately 70% of the roots are covered by impermeable surfaces. While the narrow variety of this species is listed as an approved street tree per the City of Kenmore Street Tree List, this is not a narrow variety. Per our inventory with the City of Edmonds, we have found that red maple is a notoriously shallow rooting species that commonly conflicts with and uplifts sidewalks (Rindels 1995) and if retained, this problem will likely persist with the new sidewalk. Bridging over the roots or simply replacing the sidewalk would be a temporary solution. Therefore, the recommended action is to remove the tree.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Loss of canopy coverage.

Figure 2. Image of significant Tree #101 that should be removed.

Tree #102

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 15.4 inches and an average canopy radius of 15 feet. This tree is in *Good* condition and located in a narrow, 1.5-foot planting strip. The tree has an uncorrected lean over the road. The sidewalk has been replaced with cement pavers and it appears that the pavers have settled, causing some damage to the root collar (the area of transition from the roots to the stem). Approximately 70-percent of

the roots are covered by impermeable surfaces. While the narrow variety of this species is listed as an approved street tree per the City of Kenmore Street Tree List, this is not a narrow variety. Per our inventory with the City of Edmonds, we have found that red maple is a notoriously shallow rooting species that commonly conflicts with and uplifts sidewalks (Rindels 1995) and although the pavers currently do not have substantial uplift from the roots, it is only a matter of time. If this tree is retained, then bridging over tree roots or replacing the sidewalk would be a temporary solution and would eventually need to be repaired again. Therefore, the recommended action is to remove the tree.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Loss of overall canopy coverage.

Figure 3. Pavers over the root system of Tree #102.

Tree #103

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 9.3 inches and an average canopy radius of 10 feet. This tree is in *Good* condition and is located in a two-foot planting strip. The sidewalk has a small crack starting to form, indicating that the roots are pushing against the asphalt. There is minor sidewalk lift with visible recent repairs. Approximately 70-percent of its roots are covered by impermeable surfaces. While the narrow variety of this species is listed as an approved street tree per the City of Kenmore Street Tree List, this is not a narrow variety. Per our inventory with the City of Edmonds, we have found that red maple is a notoriously shallow rooting species that commonly conflicts with and uplifts sidewalks (Rindels 1995) and if retained, this problem will likely persist with the new sidewalk. Bridging over the roots or simply replacing the sidewalk would be a temporary solution. Therefore, the recommended action is to remove the tree.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.

Disadvantages for Removal: Overall loss of canopy coverage.

Figure 4. Tree #103 whose trunk is abutting against the existing sidewalk, resulting in minor uplift.

Tree #104

This tree is a red maple (*Acer rubrum*). It is approximately 60 feet tall, has a DBH of 21.9 inches with co-dominant stems at eight feet off the ground and an average canopy radius of 13 feet. This tree is in *Fair* condition and is located in a narrow planting strip that is the same width as the tree's diameter. This tree has co-dominant (2) stems about eight feet up from the ground. The trunk and root system are pushing against both the sidewalk and the street curb. Pavers are sinking which is causing a tripping hazard for pedestrians and obstacles for wheelchairs and the visually impaired. There is also a street sign approximately 2.5 feet from the trunk and replacement of this post may result in damage to major roots. Approximately 60-percent of the root system is covered by impermeable surfaces. While the narrow variety of this species is listed as an approved street tree per the City of Kenmore Street Tree List, this is not a narrow variety. Per our inventory with the City of Edmonds, we have found that red maple is a notoriously shallow rooting species that commonly conflicts with and uplifts sidewalks (Rindels 1995) and if retained, this problem will likely persist with the new sidewalk. Bridging over the roots or simply replacing the sidewalk would be a temporary solution. Therefore, the recommended action is to remove the tree.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 5. Trunk of Tree #104 directly impacting the existing sidewalk pavers.

Tree #105

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 15 and an average canopy radius of 12 feet. This tree is in *Good* condition and is located in a 2.5-foot planting strip adjacent the street. The sidewalk is cracking due to surface root upheaval. There is minor damage to the root collar due to contact with the asphalt. Approximately 70-percent of the roots are covered by impermeable surfaces. While the narrow variety of this species is listed as an approved street tree per the City of Kenmore Street Tree List, this is not a narrow variety. Per our inventory with the City of Edmonds, we have found that red maple is a notoriously shallow rooting species that commonly conflicts with and uplifts sidewalks (Rindels 1995) and if retained, this problem will likely persist with the new sidewalk. Bridging over the roots or simply replacing the sidewalk would be a temporary solution. Therefore, the recommended action is to remove the tree.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 6. Tree #105 already damaging the newly replaced sidewalk.

Tree #106

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 17.4 inches and an average canopy radius of 18 feet. This tree is in *Fair* condition, is located in a two-foot planting strip, and has an uncorrected lean over the road. The asphalt repairs rise above the cement sidewalk at the tree's base and slopes away from the road. This out-slope may be hazardous to pedestrians, wheelchairs and the visually impaired. Approximately 70-percent of its roots are covered by impermeable surfaces. While the narrow variety of this species is listed as an approved street tree per the City of Kenmore Street Tree List, this is not a narrow variety. Per our inventory with the City of Edmonds, we have found that red maple is a notoriously shallow rooting species that commonly conflicts with and uplifts sidewalks (Rindels 1995) and if retained, this problem will likely persist with the new sidewalk. Bridging over the roots or simply replacing the sidewalk would be a temporary solution. Therefore, the recommended action is to remove the tree.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 7. Major damage to the existing sidewalk from the shallow root system of Tree #106.

Tree #107

This tree is a red maple (*Acer rubrum*). It is approximately 35 feet tall, has a DBH of 14.3 inches and an average canopy radius of 16 feet. This tree is in *Fair* condition and is located in a planting strip over a natural gas pipeline (see picture below). Maintenance of the sidewalk would likely result in severe damage to critical roots. Given its age, this tree may not recover from those damages to its roots. There is major cement sidewalk lift with visible damage to past asphalt repairs. The asphalt that replaced the cement sidewalk is sinking away from the road, causing a tripping hazard. It also has an uncorrected lean over the road and an unbalanced canopy. Approximately 75-percent of its roots are covered by impermeable surfaces. Similar to the reasons identified to the trees above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 8. Trunk of Tree #107 abutting against the existing sidewalk causing significant damage.

Tree #108

This tree is a red maple (*Acer rubrum*). It is approximately 35 feet tall, has a DBH of 15.8 inches and an average canopy radius of 21 feet. This tree is in *Fair* condition and is located in a planting strip approximately two feet wide. It has an uncorrected lean over the road and has an unbalanced canopy. There is a street sign located in the critical root zone and should be relocated past the drip line of the canopy. The asphalt is cracking and sinking, causing a potential hazard or obstacle for pedestrians, wheelchairs and the visually impaired. Approximately 75-percent of its roots are covered by impermeable surfaces. Similar to the reasons identified for the trees above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 9. Trunk immediately abutting against the existing sidewalk causing significant damage.

Tree #109

This tree is a red maple (*Acer rubrum*). It is approximately 35 feet tall, has a DBH of 11 inches and an average canopy radius of 8 feet. This tree is in *Dead* and should be removed to avoid failure and injury to pedestrians and vehicles.

Advantages for Removal: Tree is dead.
Disadvantages for Removal: None.

Figure 10. Tree #109 is dead and should be removed.

Tree #110

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 10.8 inches and an average canopy radius of 12 feet. This tree is in *Good* condition and is located in a two-foot planting strip. The asphalt is starting to crack, and it is sinking, causing a hazard and obstacle for pedestrians, wheelchairs and the visually impaired. Approximately 60-percent of its roots are covered by impermeable surfaces. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 11. Trunk of Tree #110 already abutting against the sidewalk and a small planting strip.

Tree #111

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 14.4 inches and an average canopy radius of 16 feet. This tree is in *Good* condition and is located in a 2.5-foot planting strip. This tree is directly across the sidewalk from a utility pole and its roots likely extend toward two utility boxes on the ground. Utility boxes and the pole may possibly interfere with the tree, or vice versa. Any maintenance to these utilities may cause significant damage to the root system. Other, smaller trees or shrubs would be a better alternative in this area due to the presence of the utilities. There is minor sidewalk lift with the asphalt cracking, resulting in an uneven surface and an obstacle for wheelchairs and the visually impaired. The roots of this tree are approximately 60-percent covered by impermeable surfaces. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 12. Trunk of Tree #111 already abutting against the sidewalk with no room within the planting strip.

Tree #112

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 12.1 inches and an average canopy radius of 16 feet. This tree is in *Good* condition and is located in a 2.5-foot planting strip. There are utility lines interfering with the canopy. There is minor sidewalk lift and the asphalt is cracking, causing uneven surfaces, that may be a potential hazard for pedestrians, wheelchairs and the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 13. Trunk and roots causing uplift and damage to the existing sidewalk.

Tree #113

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 15.5 inches and an average canopy radius of 16 feet. This tree is located in a 2.5-foot planting strip and is in *Poor* condition due to a large amount of included bark at its co-dominant (2) stem union, about eight feet off the ground. There is sidewalk lift of approximately three inches and cracks in the asphalt. The lift and cracks are causing uneven surfaces that may be tripping hazards or obstacles for wheelchairs or the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. This tree has a slight lean over the road. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 14. Significant damage caused by trunk and root system.

Tree #114

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 13.6 inches and an average canopy radius of 5 feet. This tree is in *Good* condition and is located in a 2.5-foot-wide planting strip. There is minor sidewalk lift with cracks in the asphalt and may be an obstacle for pedestrians, wheelchairs or the visually impaired. Similar to the reasons identified to the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 15. Trunk and root system causing damage to the existing sidewalk.

Tree #115

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 10.4 inches and an average canopy radius of 12 feet. This tree is in *Good* condition and is located in a planting strip approximately 2.5 feet wide. This tree has a slight lean over the road and there are minor cracks and lift in the sidewalk. Approximately 50-percent of the roots are covered by impermeable surfaces and the tree is on a slight incline that slopes toward the road. Similar to the reasons identified to the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 16. Minor damage caused by the trunk and root system.

Tree #116

This tree is a red maple (*Acer rubrum*). It is approximately 30 feet tall, has a DBH of 16.4 inches and an average canopy radius of 20 feet. This tree is in a three-foot planting strip and is in *Poor*

condition, likely due to its conflict with the repaired sidewalk. The root crown sits several inches above ground level which is causing shallow roots to damage the sidewalk and vice versa. This is a possible tripping hazard or obstacle for some users. Approximately 50-percent of the roots are covered by impermeable surfaces. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 17. Significant damage caused by the existing tree.

Tree #117

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 14.5 inches and an average canopy radius of 17 feet. This tree is in *Fair* condition and is located in a planting strip that is about two feet wide. The asphalt is cracking, and the tree is pushing against it, causing a potential tripping hazard or other obstacle for wheelchairs or the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. Similar to the reasons identified to the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 18. Minor damage to the sidewalk caused by the trunk and the root system.

Tree #118

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 13.7 inches and an average canopy radius of 18 feet. This tree is in *Fair* condition and located in a planting strip that is about 2.5 feet wide. There is minor sidewalk lift, however, there is cracking causing an uneven walking surface and potential tripping hazards or obstacles for some users. Approximately 50-percent of the roots are covered by impermeable surfaces. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 19. Significant damage caused by the trunk and root system of Tree #118.

Tree #119

This tree is a red maple (*Acer rubrum*). It is approximately 20 feet tall, has a DBH of 6.4 inches and an average canopy radius of 7 feet. This tree is in *Good* condition and is located in a planting strip that is about 2.5 feet wide. This sidewalk is starting to buckle at the edge closest to the tree but is otherwise in good condition with no perceived hazards. The sidewalk is still six inches from the base of the trunk, but it is becoming damaged more as the tree grows. Approximately 60-percent of the roots are covered by impermeable surfaces. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 20. Minor damage to the existing sidewalk.

Tree #120

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 14.6 inches and an average canopy radius of 15 feet. This tree is in *Fair* condition and is located in a planting strip that is about 2.5 feet wide. It appears that the sidewalk was made narrower when the repairs were made. There is minor sidewalk lifting and cracking and the asphalt has sunk around root growth. This results in possible tripping hazards for pedestrians and obstacles for wheelchairs and the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. Similar to the reasons identified for the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.

Disadvantages for Removal: Overall loss of canopy coverage.

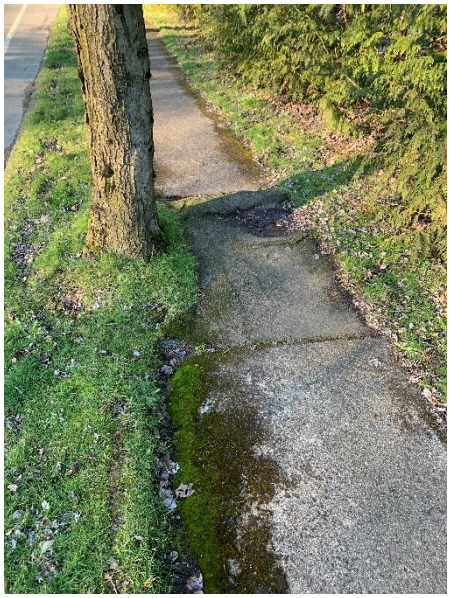


Figure 21. Minor damages caused by the trunk and root system of the subject tree.

Tree #121

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 14.6 inches and an average canopy radius of 15 feet. This tree is in *Fair* condition and is located in a planting strip that is about 2.5 feet wide. There are multiple sucker sprouts from old pruning cuts which contribute to its evaluation of *Fair*. Sidewalk repairs are buckling, posing potential tripping and obstacle hazards. Approximately 60-percent of the roots are covered by impermeable surfaces. Similar to the reasons identified to the red maples above, this tree should be removed to prevent the continuous need for sidewalk repair and should be replaced with a more suitable species.

Advantages for Removal: Eliminate the risk of further and future sidewalk damage.
Disadvantages for Removal: Overall loss of canopy coverage.

Figure 22. Minor damage caused by the subject tree.

Tree #122

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 17.2 inches and an average canopy radius of 15 feet. This tree is in *Fair* condition and is located in a planting strip about two feet wide. This tree has been heavily pruned to accommodate interfering utility lines. There is sidewalk lift, sidewalk is buckling, and roots are protruding about 1.5 feet into the sidewalk, posing a potential tripping hazard or obstacle for wheelchairs. Approximately 60-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree species, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

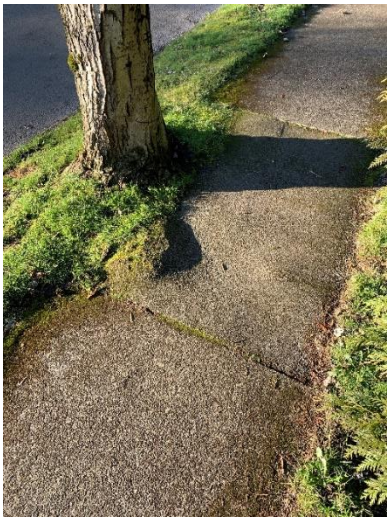


Figure 23. Significant damage resulting from the roots and trunk against the sidewalk.

Tree #123

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 17 inches and an average canopy radius of 15 feet. This tree is in *Fair* condition and is located in a planting strip that is approximately 2.5 feet wide. There is minor sidewalk lifting and cracking resulting in a possible tripping hazard. The tree has been heavily pruned to accommodate interfering utility lines. A mailbox post is about 1.5 feet from the base of the trunk and eventual replacement of that wood post may cause damage to the roots. Approximately 60% of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 24. Significant damage to the existing sidewalk from the shallow root system.

Tree #124

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 14.8 inches and an average canopy radius of 17 feet. This tree is located in a planting strip and is in *Poor* condition. There is major sidewalk lift (approx. five inches) and the tree's unbalanced canopy has been heavily pruned to accommodate utility lines. The sidewalk is mounded around the base of the three, leading to potential tripping hazards and obstacles for wheelchairs and the visually impaired. Both the impact from the sidewalk and heavy pruning have likely led to the poor condition of this tree. Other cement repairs appear newer with slight ditching at their margins. The process of these repairs likely caused further damage to this tree's roots. Approximately 40-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

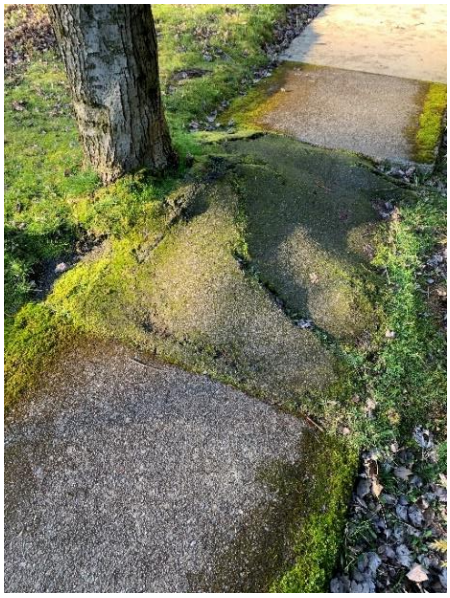


Figure 25. Major damage to the existing sidewalk from the shallow root system.

Tree #125

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 18.2 inches and an average canopy radius of 20 feet. This tree is in *Fair* condition and is located in a planting strip that is about 6 feet wide. There is minor sidewalk lift:, however, it appears that repairs have been made multiple times causing several instances of potential damage to the critical root zone. The repairs have made the sidewalk narrower. The asphalt repairs are cracking causing possible tripping hazards and other obstacles for wheelchairs and the visually impaired. Approximately 40-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 26. Major damage to the existing sidewalk from the shallow root system.

Tree #126

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 15.7 inches and an average canopy radius of 17 feet. This tree is in *Fair* condition and is located in a planting strip that is about six feet wide. Roots are starting to come through the asphalt immediately around the tree's base, and the sidewalk is narrower due to previous repairs. There is major sidewalk lift, sinking, and cracking and is a potential tripping hazard and obstacle for wheelchairs and the visually impaired. Approximately 30-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 27. Significant damage to the existing sidewalk from the root system.

Tree #127

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 20 inches and an average canopy radius of 18 feet. This tree is in *Fair* condition and is located in a planting strip that is about six feet wide. This tree has a heavy lean toward the road, and it is protruding about nine inches into the sidewalk. There is major sidewalk lift and the asphalt is failing. It has sunk away from the road and has left a three-inch difference in the level of the sidewalk. The asphalt is heavily mounded, resulting in a very uneven surface and potential hazard for pedestrians, wheelchairs and the visually impaired. Approximately 30-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

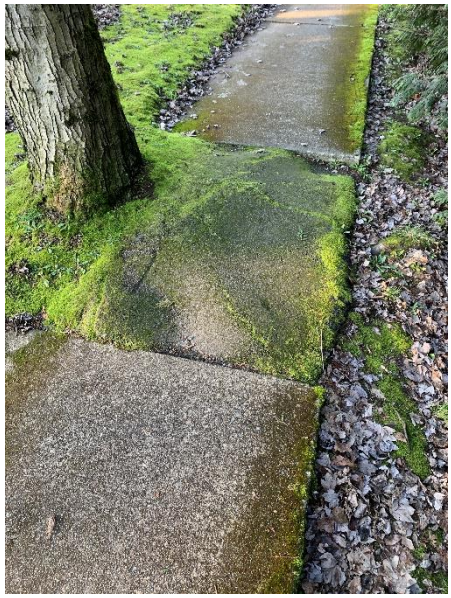


Figure 28. Significant damage to the existing sidewalk.

Tree #128

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 12.7 inches and an average canopy radius of 15 feet. This tree is in *Fair* condition and is located in a planting strip that is about six feet wide. There is damage and scarring on the base of the trunk at the root collar, likely caused by the sidewalk. There is major sidewalk lift and cracking posing a potential hazard for users. Approximately 40-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 29. Significant damage to the existing sidewalk.

Tree #129

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 18 inches and an average canopy radius of 17 feet. This tree is in *Fair* condition, is located in a three-foot planting strip, and is protruding about one foot into the sidewalk. There is a large mailbox anchored in the ground, a smaller residential mailbox, and a utility pole within the critical root zone. Any repairs to these structures will likely cause damage or stress the tree. There is also a fire hydrant approximately 30 feet away. There is minor sidewalk lift and cracks, and it is sinking on the outside edge furthest from the trunk, resulting in a possible hazard for wheelchairs or the visually impaired. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 30. Significant damage to the existing sidewalk from the shallow root system.

Tree #131

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 19.6 inches and an average canopy radius of 21 feet. This tree is in *Poor* condition and is located in a planting strip that is about eight feet wide. There are multiple galls present on the stem as well as damage to the bark in the bottom three feet of the trunk, exposing the tree's heartwood and leaving it vulnerable to pests and rot. This has likely weakened the tree and could be the reason for the galls. There is major sidewalk lift and cracking posing a potential hazard. Approximately 50-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species. Galls on the stem may indicate that there are interior defects with the tree that may result in the decline of health.

Figure 31. Multiple large galls on the stem of the tree and the significant damage to the existing sidewalk.

Tree #132

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 23.2 inches and an average canopy radius of 26 feet. It is located in a narrow planting strip about two feet wide and takes up most of that strip. A storm drain is located directly next to the tree. This tree is in *Fair* condition. There is major sidewalk deformity in the asphalt that was used in previous repairs. The sidewalk is narrowed by the width of the tree and is cracked and sunken, causing probable tripping hazards. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 32. Major damage to the existing sidewalk caused by the shallow rooting system and trunk.

Tree #133

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 23 inches and a co-dominant stem split at eight feet. It has an average canopy radius of 26 feet. This tree is located in a narrow, two-foot planting strip and is in *Fair* condition. The trunk protrudes into the sidewalk about 12 inches and has caused significant damage. The asphalt used in repairs has since cracked and adjacent cement slabs are lifted close to five inches, posing a probable tripping hazard and obstacle for wheelchairs and the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 33. Significant uplift of sidewalk caused by the shallow root system.

Tree #134

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 18 inches and an average canopy radius of 19 feet. This tree is located in a planting strip and is in *Fair* condition. The tree has grown into the sidewalk that was repaired with pavers. The pavers are sunken and uneven, and there is also minor cement sidewalk lift. These issues are creating possible tripping hazards and obstacles for wheelchairs and the visually impaired. This tree has a slight lean toward the road and its roots are approximately 60-percent covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

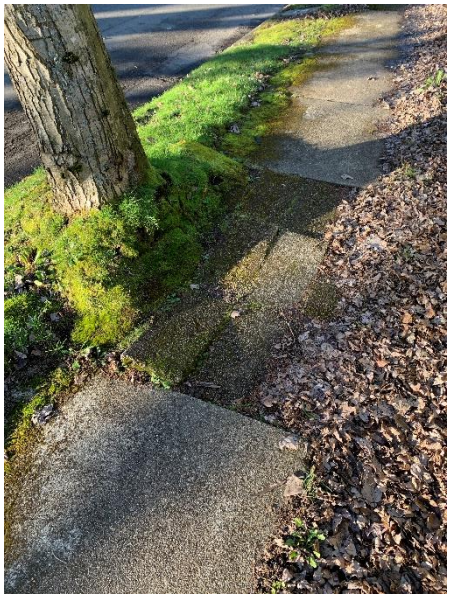


Figure 34. Significant uplift of the pavers that have replaced the old sidewalk.

Tree #135

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 12 inches and an average canopy radius of 16 feet. This tree is located in a 3-foot planting strip and is in *Good* condition. There is a utility box approximately two feet from the base of the tree and a mailbox on the opposite side. The asphalt-repaired sidewalk has small cracks and minor lift causing possible issues for pedestrians, wheelchairs, and the visually impaired. Approximately 60-percent of the tree's roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

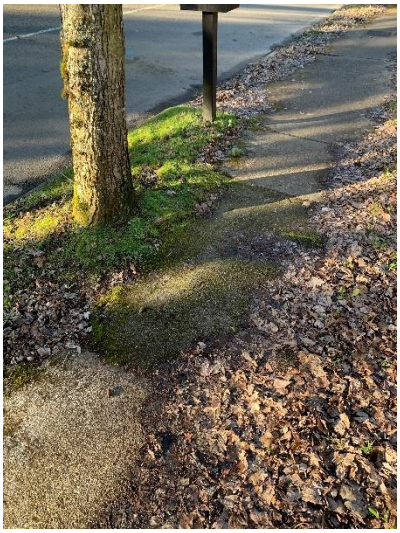


Figure 35. Significant damage to the sidewalk from the root system of the subject tree.

Tree #136

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 19.9 inches and an average canopy radius of 21 feet. This tree is located in a planting strip, is only about a foot from the road and is in *Fair* condition. There is major sidewalk lift and cracks causing a probable hazard to pedestrians, wheelchairs and the visually impaired. Approximately 50-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 36. Significant uplift and damage of the existing sidewalk.

Tree #137

This tree is a red maple (*Acer rubrum*). It is approximately 35 feet tall, has a DBH of 20.7 inches and an average canopy radius of 26 feet. This tree is located in a planting strip, is about a foot from the road, leans over the road, and is in *Fair* condition. There is major sidewalk damage with pieces of asphalt loose on the ground and exposed roots. The exposed roots have been damaged and may weaken the tree, making it more susceptible to disease and insects. The exposed roots also present a hazard to pedestrians, wheelchairs and the visually impaired. Approximately 70-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species. The damage to the surface roots may prove to be substantial enough that the decline of the tree's health is inevitable and tree removal be required.

Figure 37. Major uplift and damage to the existing sidewalk form the shallow root system.

Tree #138

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 18.6 inches and an average canopy radius of 20 feet. This tree is located in a narrow, 1.5-foot planting strip and is in *Poor* condition with an exposed root collar. There is major sidewalk damage, and the tree has exposed roots. The exposed roots have been damaged and may weaken the tree, making it more susceptible to disease and insects. The exposed roots also present a hazard to pedestrians, wheelchairs and the visually impaired. Approximately 75-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 38. Significant damage to the existing sidewalk creating a hazard.

Tree #139

This tree is a red maple (*Acer rubrum*). It is approximately 55 feet tall, has a DBH of 18.2 inches and an average canopy radius of 15 feet. This tree is located in a planting strip about five feet wide and is in *Fair* condition. This tree has a lean toward the road and has an unbalanced canopy. There are three water utility accesses about ten feet from the trunk and appears to be driven on, which can damage delicate, important surface roots. The sidewalk is narrower here and has minor lift and cracking causing possible hazards for pedestrians, wheelchairs and the visually impaired. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 39. Minor uplift of the existing sidewalk from surface roots.

Tree #140

This tree is a red maple (*Acer rubrum*). It is approximately 30 feet tall, has a DBH of 10.6 inches and an average canopy radius of 14 feet. This tree is located in an eight-foot-wide planting strip and in *Good* condition. The tree has grown into the sidewalk causing lift in the cement and narrowing of the corridor due to the fence on the other side of the walk. This narrowing and slight lift are possible hazards or obstacles to pedestrians, wheelchairs, and the visually impaired. Approximately 20-percent of this tree's roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 40. Minor uplift or the existing sidewalk due to surface roots.

Tree #141

This tree is a red maple (*Acer rubrum*). It is approximately 30 feet tall, has a DBH of 15 inches and an average canopy radius of 15 feet. This tree is located in a planting strip that is about four feet wide and is in *Good* condition. The corridor is narrowing, has minor sidewalk lift and cracking, posing potential hazards for pedestrians, wheelchairs and the visually impaired. Approximately 50-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

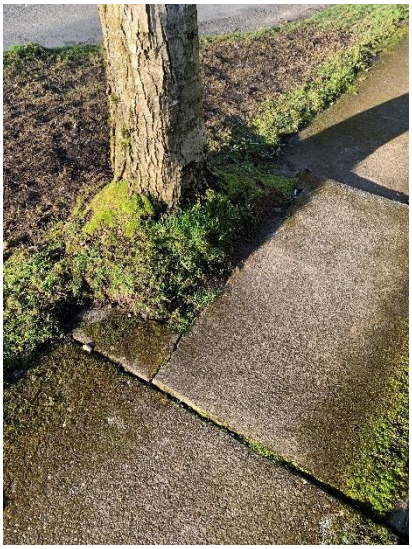


Figure 41. Minor uplift to the existing sidewalk from the surface roots.

Tree #142

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 19.2 inches and an average canopy radius of 15 feet. This tree is as wide as the planting strip it is located in. The tree is in *Good* condition. The tree trunk is encroaching on the sidewalk causing the corridor to be narrower. There is minor sidewalk lift and asphalt repairs have sunk away from the tree and the road. These issues are a possible hazard to pedestrians, wheelchairs, and the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

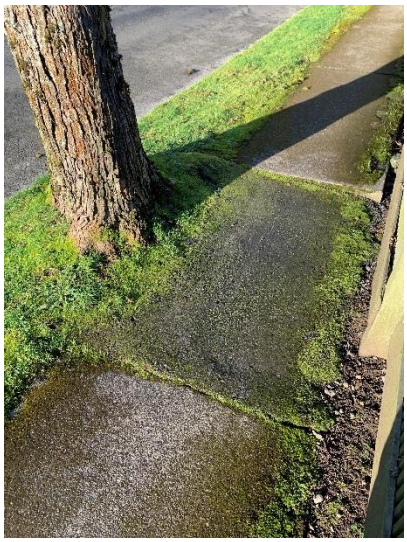


Figure 42. Very minor damage to the existing sidewalk from the trunk and surface roots.

Tree #143

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 19.7 inches and an average canopy radius of 13 feet. This tree is located in a planting strip that is about three feet wide and is in *Good* condition. The corridor is narrowing, has minor sidewalk lift and cracking, posing potential hazards for pedestrians, wheelchairs and the visually impaired. There are two posts attached to cement pedestals buried in the ground. One is about five feet from the trunk while the other is about 15 feet away. Approximately 60-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

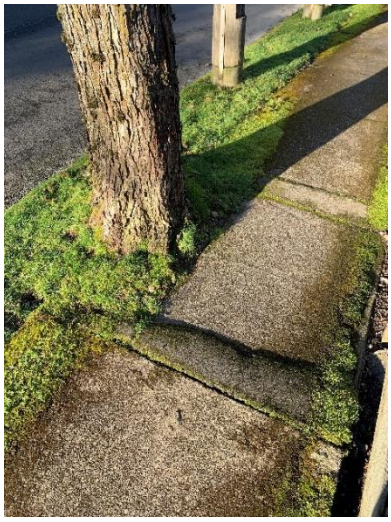


Figure 43. Uplift of the existing sidewalk due to the shallow surface roots.

Tree #144

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 12.5 inches and an average canopy radius of 16 feet. This tree is located in a planting strip that is about three feet wide and is in *Good* condition. There is about a two-inch sidewalk lift and the cement has cracked and broken, exposing part of the root collar, and damaging the bark. The lift is a possible tripping hazard and obstacle for pedestrians, wheelchairs and the visually impaired. There is a neighborhood mailbox about four feet from the base of the tree and about six inches from the sidewalk. Approximately 80-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

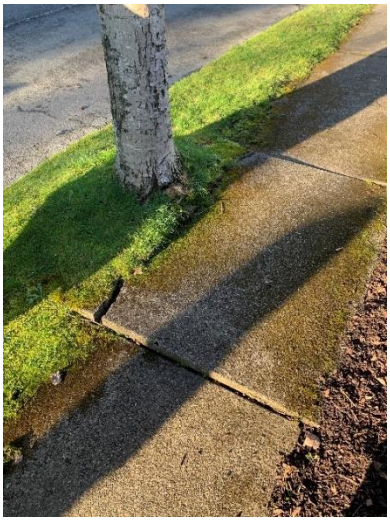


Figure 44. Minor uplift of the existing sidewalk.

Tree #145

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 24.2 inches and an average canopy radius of 20 feet. This tree is located in a narrow planting strip as wide as the diameter of the tree and is in *Good* condition. There is significant lean over the road and scarring on the bark from the ground up about three feet. There is major sidewalk lift, cracking and sinking causing probable hazards for pedestrians, wheelchairs, and the visually impaired. There is a fire hydrant about 10 feet from the trunk and less than a foot from the sidewalk. Approximately 70-percent of the roots are covered by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, may allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

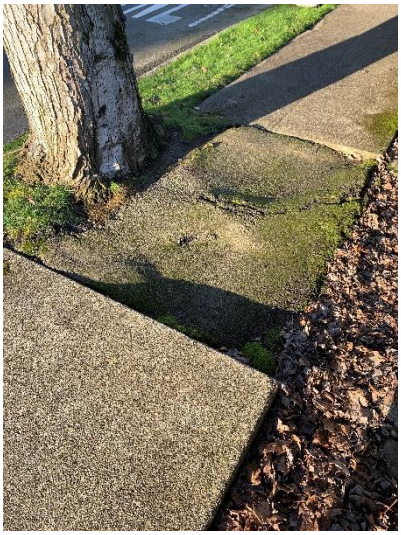


Figure 45. Significant damage to the existing sidewalk.

Tree #146

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 16.3 inches, and an average canopy radius of 21 feet that is in conflict with utility lines. This tree is located in a planting strip about 2 feet wide and is in *Fair* condition. There are utility lines interfering with the tree's canopy. There is a significant scar that is about two feet long starting from the ground. This tree also has one small visible girdling root that could be removed to prolong the life of the tree. There is major sidewalk lift, cracking and sinking posing significant risk to pedestrians, wheelchairs, and the visually impaired. It may be impassible by one or more of those groups. Approximately 80-percent of the roots are cover by impermeable surfaces. Although the species is shallow rooting and a poor street tree choice, removing the existing sidewalk and diverting the sidewalk around the tree, as shown in Alternative designs 3A and 3B, would allow for its retention.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

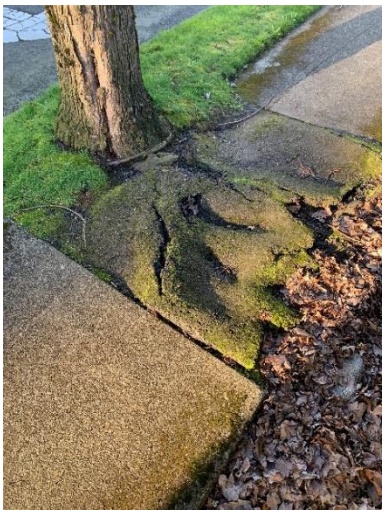


Figure 46. Major damage to the existing sidewalk due to surface roots of the subject tree.

Tree #147

This tree is a bitter cherry (*Prunus emarginata*). It is approximately 50 feet tall, has a DBH of 16.3 inches and an average canopy radius of 15 feet. This tree is located in a two-foot planting strip and is in *Poor* condition with a considerable amount of dead wood in its canopy. The tree has a significant lean over the road and multiple galls on the trunk. The cement has been replaced with pavers and is an uneven surface. There is small potential for hazard or obstacle for pedestrians, wheelchairs and the visually impaired. Approximately 80-percent of the roots are covered by impermeable surfaces. *Prunus sp.* is identified by the City of Kenmore as an unacceptable street tree species. Recommended action would be to remove this tree and replace with a more suitable tree.

Advantages for Removal: Opportunity to remove a tree in poor health and replace it with a more street tree appropriate species.
Disadvantages for Removal: Temporary loss of canopy coverage.

Figure 47. The subject tree is in *Poor* condition and should be removed and replaced with a more suitable species.

Tree #148

This tree is a red maple (*Acer rubrum*). It is approximately 20 feet tall, has a DBH of 4.8 inches and an average canopy radius of 9 feet. This tree is located in the middle of a 2.5-foot planting strip and is in *Excellent* condition. No current issues with the sidewalk were observed at the time data was gathered. None of the supplied sidewalk designs have any alterations occurring near this tree. No action is recommended at this time.

Figure 48. Juvenile subject tree that is not damaging the sidewalk and should be retained.

Tree #149

This tree is a red maple (*Acer rubrum*). It is approximately 20 feet tall, has a DBH of 7.6 inches and an average canopy radius of 9 feet. This tree is located in a six-foot planting strip and is in *Excellent* condition. There is a utility pole about four feet from the trunk and guy lines driven into the ground. Both of these things may interfere with roots as the tree grows. There is minor sidewalk lift, about two inches which may be a hazard or obstacle for pedestrians, wheelchairs and the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. The root system is minimally impacting sidewalk and should be protected by bridging over them as shown in Design Alternative 2 or 3A. This would allow for the protection of the juvenile roots and allow for tree retention.

Advantages of Alternative Designs 2 and 3A: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement may be required in the future due to the shallow rooting nature of the species.

Figure 49. Minor uplift of the existing sidewalk due to surface roots of the subject tree.

Tree #150

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 8.8 inches and an average canopy radius of 12 feet. This tree is located in a six-foot planting strip and is in *Good* condition. There is major sidewalk lift, about six inches, which may be a hazard or obstacle for pedestrians, wheelchairs and the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. The root system is minimally impacting sidewalk and should be protected by bridging over them as shown in Design Alternative 2 or 3A. This would allow for the protection of the juvenile roots and allow for tree retention.

Advantages of Alternative Designs 2 and 3A: Allow for the retention of the significant tree.

Disadvantages of Alternative Designs 3A and 3B: Eventual sidewalk repair and replacement

Figure 50. Bridging over the sidewalk would allow for the retention of the tree.

Tree #151

This tree is a bitter cherry (*Prunus emarginata*). It is approximately 15 feet tall, has a DBH of 5.6 inches and an average canopy radius of 14 feet. This tree is located in a two-foot planting strip and is in *Poor* condition due in part to a large wound at the base of the trunk. The tree's location caused the repairs made with pavers to narrow the sidewalk. There is no uplift, but the surface is uneven, a potential obstacle for wheelchairs and the visually impaired. Approximately 90-percent of the roots are covered by impermeable surfaces. *Prunus sp.* is identified by the City of Kenmore as an unacceptable street tree species. Recommended action would be to remove this tree and replace with a more suitable tree.

Advantages for Removal: Opportunity to remove a tree in poor health and replace it with a more street tree appropriate species.
Disadvantages for Removal: Temporary loss of canopy coverage.

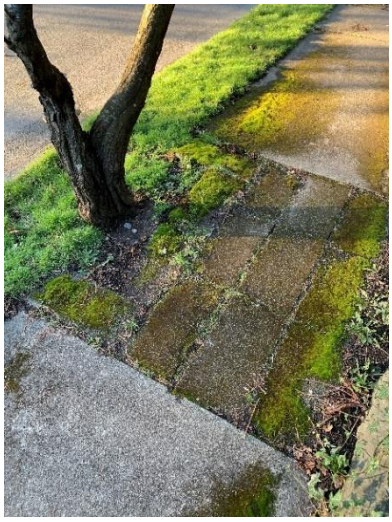


Figure 51. Subject tree in *Poor* health that should be removed and replaced with a more suitable species.

Tree #167

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 22.3 inches and an average canopy radius of 16 feet that is in conflict with utility lines. This tree is located in a narrow planting strip that is as wide as the trunk and is in *Fair* condition. Utility lines are interfering with the canopy of the tree and there is significant lift and damage to both the sidewalk and the base of the tree. The asphalt has buckled all around the root system creating obstacles for pedestrians, wheelchairs and the visually impaired. Approximately 60-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 52. Root system severely impacting the existing sidewalk creating a hazard for pedestrians.

Tree #168

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 16.5 inches and co-dominant stems at eight feet, and an average canopy radius of 16 feet. This tree is located in a planting strip that is as wide as the trunk and is in *Fair* condition. It is co-dominant (2) at eight feet from the ground. There is major sidewalk lift, cracking and buckling creating probable obstacles for wheelchairs and the visually impaired; it is a possible tripping hazard for pedestrians. Approximately 80-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 53. Root system severely impacting the existing sidewalk creating a hazard for pedestrians.

Tree #169

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 19 inches and an average canopy radius of 25 feet. This tree is located in a planting strip as wide as the trunk and is in *Fair* condition. There is a utility pole less than two feet from the base of the tree and any repairs would damage the root system, making it weaker and more susceptible to disease and pests. The canopy is unbalanced, likely due to pruning for the utility pole. The sidewalk is very narrow behind this tree and there is major sidewalk lift and cracking possibly making it hazardous to pedestrians, wheelchairs and the visually impaired. Approximately 90-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

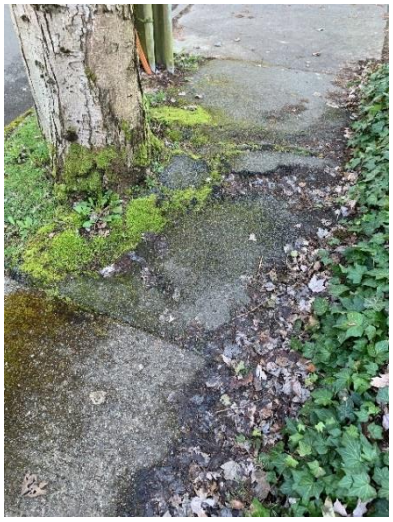


Figure 54. Root system of the subject tree is severely impacting the existing sidewalk.

Tree #170

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 12.4 inches and an average canopy radius of 20 feet. This tree is located in two-foot planting strip and is in *Fair* condition. There is swelling at the root collar and the tree has a slight lean over the street. There is minor sidewalk sinking and lifting with water pooling in the low area. There are no major obstacles in the sidewalk behind this tree. Approximately 80-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 55. Root system of the subject tree is severely impacting the existing sidewalk.

Tree #172

This tree is a red maple (*Acer rubrum*). It is approximately 25 feet tall, has a DBH of 21.3 inches and an average canopy radius of 28 feet. This tree is located in a planting strip that is as wide as the trunk and is in *Good* condition. There is major sidewalk lift, cracking and sinking and may

be hazardous for pedestrians, wheelchairs and the visually impaired. Approximately 75-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 56. Root system of the subject tree is severely impacting the existing sidewalk.

Tree #173

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 19.4 inches and an average canopy radius of 22 feet. This tree is located in a planting strip that is as wide as the tree and is in *Fair* condition. There are many exposed roots that make only half of the sidewalk passable, too narrow for a wheelchair and an obstacle for the visually impaired and pedestrians. There is also a storm drain about six feet away on the other side of the sidewalk that is lifting the sidewalk. Approximately 60-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

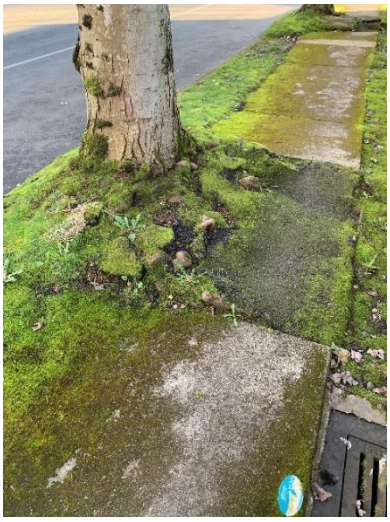


Figure 57. Root system and trunk of the subject tree is severely impacting the existing sidewalk, creating a hazard for pedestrians.

Tree #174

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 23 inches and an average canopy radius of 27 feet. This tree is located in a planting strip adjacent to the sidewalk. It is in *Fair* condition. There is major sidewalk lift and exposed roots and appears that repairs have been made both with asphalt and cement. This section is likely unpassable for wheelchairs. The sidewalk poses potential hazards to pedestrians and people with visual impairment. Significant damage to the tree's roots may occur during any new sidewalk construction. Approximately 70-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 58. Severe impact to the existing sidewalk caused by the root system of the subject tree.

Tree #176

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 15.7 inches and an average canopy radius of 13 feet. This tree is located in a planting strip that is two feet wide and is in *Fair* condition. There is minor sidewalk lift, cracking and sinking with minimal interference for pedestrians, slightly more for wheelchairs and the visually impaired. The fence on the other side of the sidewalk appears new and construction may have damaged roots. Approximately 60-percent of the roots are covered with impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 59. Minor uplift of the existing sidewalk due to the root system.

Tree #177

This tree is a red maple (*Acer rubrum*). It is approximately 40 feet tall, has a DBH of 20.6 inches and an average canopy radius of 17 feet. This tree is located in a planting strip and is in *Poor* condition attributed to its branching structure. The trunk is growing into the sidewalk causing lifting, sinking, and cracking. These are possible hazards and obstacles for pedestrians, wheelchairs and the visually impaired. Approximately 80-percent of the roots are covered with impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

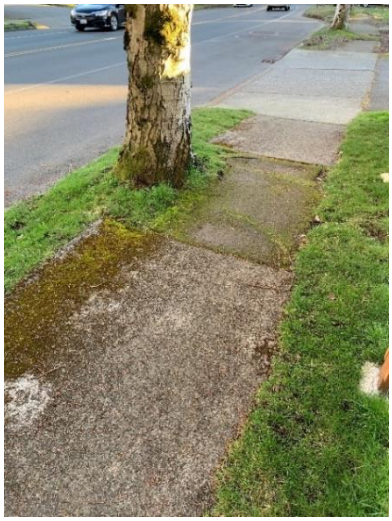


Figure 60. Minor impact on the existing sidewalk due to the root system.

Tree #178

This tree is a red maple (*Acer rubrum*). It is approximately 50 feet tall, has a DBH of 19.6 inches and an average canopy radius of 20 feet. This tree is located in a planting strip and is in *Fair* condition. There is a wound on the street side of this tree, likely from landscape equipment. There is minor sidewalk lift, cracks and sinking, possibly enough to pose a hazard to pedestrians, wheelchairs and the visually impaired. Approximately 75-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 61. Significant impact to the existing sidewalk caused by the root system of the subject tree.

Tree #179

This tree is a red maple (*Acer rubrum*). It is approximately 55 feet tall, has a DBH of 21.8 inches and an average canopy radius of 20 feet. This tree is located in an eight-foot planting strip and is in *Fair* condition. There is a potential problem with its girdling roots in that they can choke and weaken the tree making it more susceptible to disease and pests. Girdling roots may also result in death. Given this tree's age, it is inadvisable to try and remove the girdling roots as that may result in tree death as well. There is major sidewalk lift and sinking posing possible obstacles to wheelchairs and the visually impaired, and tripping hazards for pedestrians. Approximately 50-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 62. Significant impact to the existing sidewalk due to the root system of the subject tree.

Tree #180

This tree is a red maple (*Acer rubrum*). It is approximately 60 feet tall, has a DBH of 22 inches and an average canopy radius of 21 feet. This tree is located in an eight-foot planting strip and is in *Fair* condition. There is minor sidewalk lift creating a possible tripping hazard and obstacle for wheelchairs and the visually impaired. Approximately 20-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 63. Severe impact to the existing sidewalk caused by the shallow root system.

Tree #181

This tree is a red maple (*Acer rubrum*). It is approximately 60 feet tall, has a DBH of 16.8 inches and an average canopy radius of 20 feet. This tree is located in a planting strip very near a driveway and is in *Fair* condition. There is a storm drain in front of the tree on the road. This tree is next to a driveway and the root system may incur a higher stress level due to this. There are multiple suckers on the trunk of the tree, possibly due to the stress of its location. There is minor sidewalk sinking where repairs were made with asphalt. This sinking is a possible tripping hazard for pedestrians and obstacle for wheelchairs and the visually impaired. Approximately 75-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 64. Severe impact to the existing sidewalk caused by the shallow root system.

Tree #182

This tree is a red maple (*Acer rubrum*). It is approximately 60 feet tall, has a DBH of 26 inches and an average canopy radius of 17 feet. This tree is located in a planting strip that is narrower than the trunk and is in *Fair* condition. There are observed recent repairs to the sidewalk but directly next to the tree. There is also a large utility box on the opposite side of the sidewalk that appears recently installed and is on top of the critical root zone. This can have negative impacts, especially to older trees. There was spray paint and pin flags in the immediate area, possibly to indicate where repairs will be made. There are minor sidewalk cracks and sinking that are possible hazards for pedestrians, wheelchairs and the visually impaired. There are exposed surface roots next to the sidewalk. Approximately 50-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 65. Severe impact to the exiting sidewalk caused by the shallow root system of the subject tree.

Tree #186

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 25.3 inches and an average canopy radius of 24 feet. This tree is located at the edge of a residential lawn and in *Fair* condition. There appears to be recent repairs made to the sidewalk directly next to the tree and is free of visible defects. Approximately 40-percent of the roots are covered with impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 66. Minor impact to the existing sidewalk.

Tree #187

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 20.2 inches and an average canopy radius of 16 feet. This tree is located on a residential property and is in *Fair* condition. There is a utility pole about three feet from the base of the tree and looks to be newly installed. The sidewalk appears recently repaired with no visible lifting or cracking. Some roots of the tree are exposed and if the sidewalk and utility pole are new, there was likely damage or stress to the root system. This damage may take years to appear in the tree. Approximately 40-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 67. Minor impact to the existing sidewalk.

Tree #188

This tree is a red maple (*Acer rubrum*). It is approximately 45 feet tall, has a DBH of 22.6 inches and an average canopy radius of 16 feet. This tree is located on a residential property in *Fair*

condition. This tree is in the corner of a lawn and has sidewalk on one side and a driveway on the other. The pressure from the driveway may put additional stress on the root system. There is minor lifting of the cement sidewalk, about an inch. Approximately 75-percent of the roots are covered by impermeable surfaces. As none of the provided sidewalk designs will impact this tree, no action is recommended at this time.

Figure 68. Minor impact to the existing sidewalk.

Tree #222

This tree is a Colorado spruce (*Picea pungens*) is approximately 60 feet tall, has a DBH of 18.4 inches and an average canopy radius of 10 feet. This tree is located in a natural area that abuts private property with no clear boundary to separate the two. The trunk is approximately one foot from the existing sidewalk, has two co-dominant stems and is in *Fair* condition. This tree does not appear to be impacting the sidewalk. This tree is not on the approved street tree list for Kenmore. There are many dead branches on the interior of this tree that may be the result of a dense canopy creating shady conditions on its interior. Approximately 40-percent of the roots are covered by impermeable surfaces. Alternative designs 3A and 3B show the demolition of the existing sidewalk and moving the new one further away from the tree. This design is recommended because it would allow for the continued, healthy growth of the subject tree.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: None.

Figure 69. Tree #222 located in a natural area away from the existing sidewalk.

Tree #223

This tree is a western red cedar (*Thuja plicata*) is approximately 70 feet tall, has a DBH of 26 inches and an average canopy radius of 14 feet. This tree is in *Good* condition. Similar to Tree #222, this tree is in a natural area away from the existing sidewalk. Alternative designs 3A and 3B show the demolition of the existing sidewalk and moving the new one further away from the tree. This design is recommended because it would allow for the continued, healthy growth of the subject tree.

Advantages of Alternative Designs 3A and 3B: Allow for the retention of the significant tree.
Disadvantages of Alternative Designs 3A and 3B: None.

Tree #224

This tree is a bitter cherry (*Prunus emarginata*) and is approximately 25 feet tall. It has multiple co-dominate stems with a combined DBH of 14.1-inches. Its average canopy radius is 12 feet and is in *Poor* health. It is located less than six inches from the sidewalk and has had significant pruning for sidewalk access. Part of the sidewalk has been repaired with pavers which are uneven and are a potential obstacle for wheelchairs and the visually impaired. *Prunus sp.* is identified by the City of Kenmore as an unacceptable street tree species. While the design alternatives 3A and 3B would relocate the sidewalk away from the tree allowing its retention, this is a poor species to retain and should be removed.

Advantages for Removal: Opportunity to remove a tree in poor health and replace it with a more street tree appropriate species.
Disadvantages for Removal: Temporary loss of canopy coverage

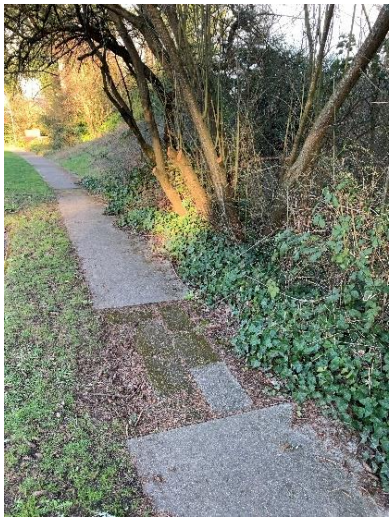


Figure 70. Multi-stem bitter cherry that should be removed and replaced with a more suitable species.

Table 3. Summary of trees that are recommended to be removed.

Tree #	Scientific Name / Common Name	Primary Reason for Removal
101	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
102	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
103	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
104	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
105	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
106	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
107	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
108	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
109	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
110	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
111	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.

112	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
113	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
114	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
115	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
116	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
117	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
118	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
119	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
120	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
121	*Acer rubrum* (Red maple)	Shallow root system impacting the existing sidewalk which would continue with the new sidewalk.
147	*Prunus emarginata* (Bitter cherry)	Tree species that is not suitable to be planted as a street tree.
224	*Prunus emarginata* (Bitter cherry)	Tree species that is not suitable to be planted as a street tree.

Tree Protection Measures

For the health and longevity of the existing trees to remain, the arborist recommends determining which trees will be preserved and implementing tree protection best management practices (BMPs).

The following BMPs are recommended to protect retained trees:

- **Tree protection fencing:** The critical root zone (CRZ) is the area that contains tree roots critical to the health and stability of the tree. Tree protection fencing should be installed along the outer dripline edge of all trees to remain. Because tree roots can extend many times the distance of the overhead canopy and several of the trees are growing closely together, the arborist advises extending the fence to a minimum distance of one foot for every diameter inch of the trunk to ensure adequate root survival. The fencing should be

four to six feet high, constructed of chain link, wire-mesh, or high-visibility plastic fencing, and include warning signs, such as "Tree Protection Area – Keep Out."

- **Minimize critical root disturbance:** Excavation of tree roots should be conducted using an Air Spade to safely remove soil from the base of the tree and root flare. The spade uses high pressure air to blow soil from the tree base which provides the opportunity to examine the condition of roots and provide access to prune the roots.

- **Minimize root zone disturbance:** All construction activities, including staging and driving machinery, should be located outside of the CRZ. If temporary impacts in the CRZ are unavoidable, the arborist recommends using one of the following temporary measures to minimize soil compaction and root damage:

    - Install six to twelve inches of wood chip mulch over the CRZ.
    - Lay down a ¾-inch thick plywood sheet over at least four inches of wood chip mulch.
    - Apply four to six inches of gravel over staked geotextile fabric.
    - Place commercial logging mats on top of a four-inch mulch layer.

  The gravel, geotextile fabric, mats, and all mulch over four-inches thick **must** be removed after the temporary disturbance is finished.

- **Minimize grade changes:** Most tree roots grow in the top six to 18 inches of soil and are highly susceptible to damage from grade changes. If the grade is lowered in the CRZ, roots critical to health and stability will be removed. If the grade is raised in the CRZ, roots can suffocate from lack of oxygen. The grade should not be altered in the CRZ.

- **Root pruning:** If mechanical excavation occurs near a tree to remain, the arborist recommends using an air or water excavator and root pruning by hand or using a mechanical root pruning tool designed to cut roots. Any roots over one inch that are exposed after mechanical excavation should be clean cut by hand.

- **Canopy pruning:** All construction activities should stay out of the canopy zone. However, if the canopy of a tree will conflict with construction, the canopy could be raised to a maximum of 20 feet to avoid aerial conflicts. Any pruning of trees should be done using best management practices as defined by the International Society of Arboriculture (ISA) and performed by ISA certified arborists. Topping, coppicing, or pollarding are **not** acceptable pruning methods for these trees. After the other trees are

removed, the shaded inner canopy will likely contain dead branches that could be removed for aesthetic purposes. No other pruning should be necessary and could negatively impact the health of the trees.

- **Maintenance:** The impacts of construction are stressful to trees, which may not show the signs of stress for up to five to ten years after being impacted. When trees are removed, the remaining tree roots and soil will be exposed to more sunlight. To help the trees adjust to the new conditions, two to four inches of wood chip mulch can be placed in the CRZ (keep mulch 12 inches away from trunks). Additionally, applying one to two inches of water to the root zones each month in the summer during construction will help the trees regenerate roots and acclimate to their new conditions.

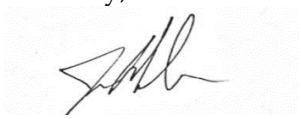
- **Monitoring:** After construction is complete, the tree protection fencing can be removed. Any branches accidentally broken during construction should be pruned. An ISA certified arborist could assist with health assessment, monitoring, and provide management recommendations for the trees post-construction as the trees recover from the impacts of construction and adapt to their new conditions.

Limitations to the Study

The findings of this report are based on the best available science and are limited to the scope, budget, and site conditions at the time of the assessment. Although the information in this report is based on sound methodology, internal physical flaws (such as cracking or root rot) or other conditions that are not visible cannot be detected with this limited basic visual screening. Trees are inherently unpredictable. Even vigorous and healthy trees can fail due to high winds, heavy snow, ice storms, rain, age, or other causes.

This report is based on the current observable conditions and may not represent future conditions of the trees. Changes in site conditions, including clearing and grading, will alter the condition of remaining trees in a way that is not predictable. The conclusions contained within this report have been made for permitting purposes only and are not intended for tree risk assessment purposes.

Sincerely,



Jake Robertson
ISA Certified Arborist© PN-8934A

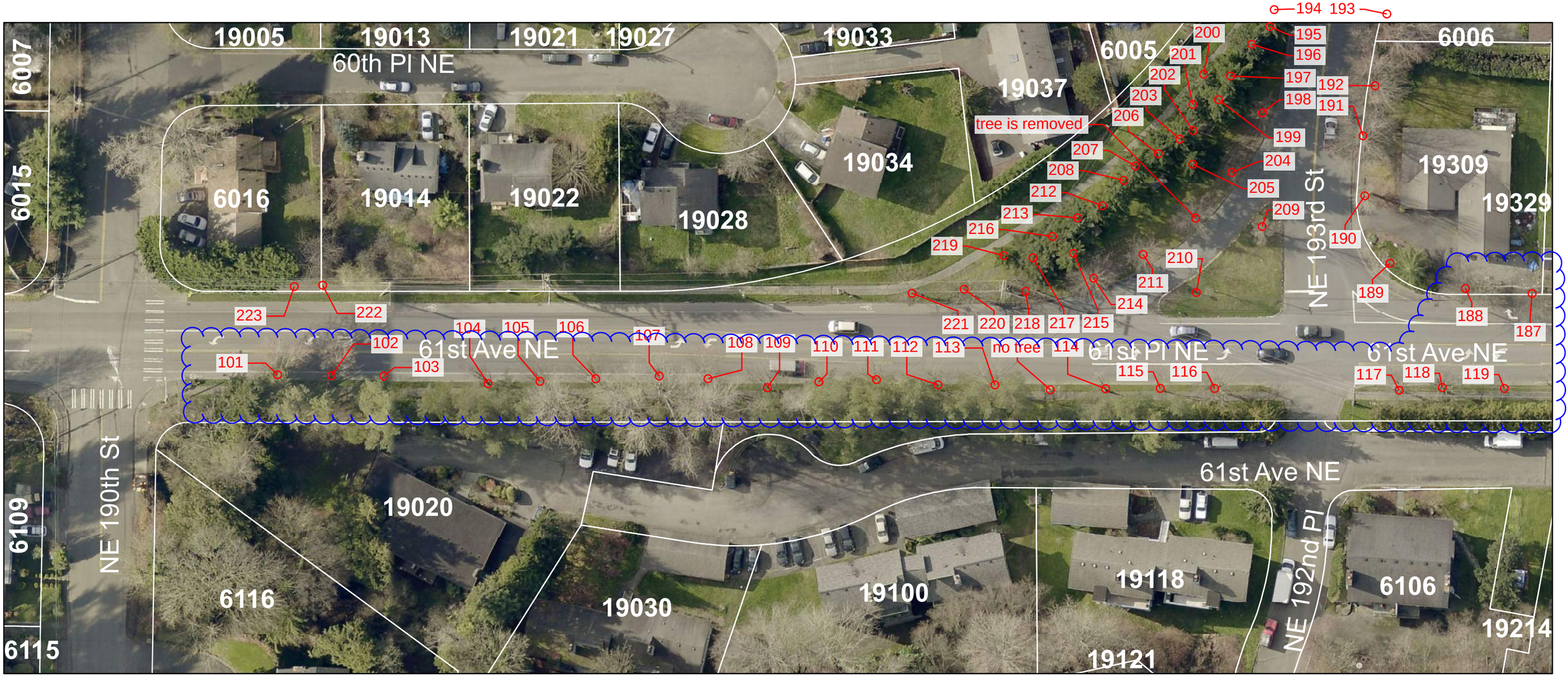
Enclosures: Tree Map & Tree Inventory Table

Enclosure A: Tree Inventory Table

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN)	HEIGHT (FT)	RADIUS (FT)	CONDITION	CRITICAL ROOT ZONE (FT)	NOTES
148	Acer rubrum 'Red Sunset' (Red Sunset red maple)	D	1	**4.8**	20	9	Excellent	22	
119	Acer rubrum (Red maple)	D	1	**6.4**	20	7	Good	15	
151	Prunus emarginata (Bitter cherry)	D	2	**6.9**	15	14	Poor	9	Large wound from tear out.
149	Acer rubrum 'Red Sunset' (Red Sunset red maple)	D	1	**7.6**	20	9	Excellent	22	Minor sidewalk uplift.
150	Acer rubrum 'Red Sunset' (Red Sunset red maple)	D	1	**8.8**	25	12	Good	15	Minor sidewalk uplift
103	Acer rubrum (Red maple)	D	1	**9.3**	50	10	Good	17	Minor sidewalk uplift. Recent sidewalk repair.
115	Acer rubrum (Red maple)	D	1	**10.4**	50	12	Good	14	Minor sidewalk uplift. Recent sidewalk repair.
140	Acer rubrum (Red maple)	D	1	**10.6**	30	14	Good	16	
110	Acer rubrum (Red maple)	D	1	**10.8**	40	12	Good	11	Minor sidewalk uplift
109	Acer rubrum (Red maple)	D	1	**11.0**	35	8	Dead	11	
135	Acer rubrum (Red maple)	D	1	**12.0**	40	16	Good	14	Minor sidewalk uplift
112	Acer rubrum (Red maple)	D	1	**12.1**	40	16	Good	12	Minor uplift. Overhead utility line conflict.
170	Acer rubrum (Red maple)	D	1	**12.4**	25	20	Fair	16	Minor sidewalk uplift
144	Acer rubrum (Red maple)	D	1	**12.5**	40	16	Good	14	Minor sidewalk uplift
128	Acer rubrum (Red maple)	D	1	**12.7**	25	15	Fair	10	Major uplift.
114	Acer rubrum (Red maple)	D	1	**13.6**	50	5	Good	16	Minor sidewalk uplift
118	Acer rubrum (Red maple)	D	1	**13.7**	25	18	Fair	15	Minor sidewalk uplift.
224	Prunus emarginata (Bitter cherry)	D	4	**14.1**	25	12	Poor	14	3 stems removed for sidewalk access.
107	Acer rubrum (Red maple)	D	1	**14.3**	35	16	Fair	6	Unbalanced canopy. Uncorrected lean over street. Major sidewalk uplift. Recent sidewalk repair.
111	Acer rubrum (Red maple)	D	1	**14.4**	40	16	Good	15	Minor sidewalk uplift. Recent sidewalk repair.
117	Acer rubrum (Red maple)	D	1	**14.5**	25	17	Fair	15	Major sidewalk uplift.
120	Acer rubrum (Red maple)	D	1	**14.6**	25	15	Fair	17	Minor sidewalk uplift. Recent sidewalk repair.
121	Acer rubrum (Red maple)	D	1	**14.6**	25	15	Fair	17	Multiple sucker sprouting from old pruning cuts.
124	Acer rubrum (Red maple)	D	1	**14.8**	25	17	Poor	15	Unbalanced canopy. Heavily pruned. Major sidewalk uplift.
105	Acer rubrum (Red maple)	D	1	**15.0**	45	12	Good	18	
141	Acer rubrum (Red maple)	D	1	**15.0**	30	15	Good	16	
102	Acer rubrum (Red maple)	D	1	**15.4**	50	15	Good	20	Uncorrected lean over road. Pavers have replaced sidewalk concrete.
113	Acer rubrum (Red maple)	D	1	**15.5**	45	16	Poor	13	Minor sidewalk uplift. Co dom at 8 ft. Major included bark.
126	Acer rubrum (Red maple)	D	1	**15.7**	25	17	Fair	18	Major uplift.
176	Acer rubrum (Red maple)	D	1	**15.7**	50	13	Fair	20	Minor sidewalk uplift
108	Acer rubrum (Red maple)	D	1	**15.8**	35	21	Fair	23	Unbalanced canopy. Uncorrected lean over street. Minor sidewalk uplift.
146	Acer rubrum (Red maple)	D	1	**16.3**	50	21	Fair	23	Overhead utility lines. Major sidewalk uplift
147	Prunus emarginata (Bitter cherry)	D	1	**16.3**	25	15	Poor	18	Lots of dead wood in canopy. Pavers.
116	Acer rubrum (Red maple)	D	1	**16.4**	30	20	Poor	12	Major sidewalk uplift.
168	Acer rubrum (Red maple)	D	1	**16.5**	25	16	Fair	20	Co dom at 8 ft. Major sidewalk uplift
181	Acer rubrum (Red maple)	D	1	**16.8**	60	20	Fair	21	Minor

TAG #	TREE NAME	EV / DEC	# STEMS	COMB DBH (IN)	HEIGHT (FT)	RADIUS (FT)	CONDITION	CRITICAL ROOT ZONE (FT)	NOTES
123	Acer rubrum (Red maple)	D	1	**17.0**	25	15	Fair	19	Heavily pruned utility lines minor sidewalk uplift.
122	Acer rubrum (Red maple)	D	1	**17.2**	25	15	Fair	18	Heavily pruned for overhead utility lines. Minor sidewalk uplift
106	Acer rubrum (Red maple)	D	1	**17.4**	45	18	Fair	11	Major sidewalk uplift. Recent sidewalk repair. Uncorrected lean over street
129	Acer rubrum (Red maple)	D	1	**18.0**	25	17	Fair	15	Minor uplift. 3 ft planting strip
134	Acer rubrum (Red maple)	D	1	**18.0**	40	19	Fair	19	Pavers. Minor sidewalk uplift
125	Acer rubrum (Red maple)	D	1	**18.2**	25	20	Fair	20	Minor uplift.
139	Acer rubrum (Red maple)	D	1	**18.2**	55	15	Fair	13	Unbalanced canopy. Minor sidewalk uplift
222	Picea pungens (Colorado spruce)	E	1	**18.4**	60	10	Fair	24	
138	Acer rubrum (Red maple)	D	1	**18.6**	45	20	Poor	16	Root flare/butt exposed. Minor uplift.
169	Acer rubrum (Red maple)	D	1	**19.0**	25	25	Fair	16	Unbalanced. Major sidewalk uplift
142	Acer rubrum (Red maple)	D	1	**19.2**	50	15	Good	5	Minor sidewalk uplift
173	Acer rubrum (Red maple)	D	1	**19.4**	45	22	Fair	8	Major sidewalk uplift
131	Acer rubrum (Red maple)	D	1	**19.6**	25	21	Poor	9	Multiple galls on stem. Major sidewalk uplift.
178	Acer rubrum (Red maple)	D	1	**19.6**	50	20	Fair	7	Minor sidewalk uplift
143	Acer rubrum (Red maple)	D	1	**19.7**	50	13	Good	22	Minor sidewalk uplift
136	Acer rubrum (Red maple)	D	1	**19.9**	40	21	Fair	17	Major sidewalk uplift
127	Acer rubrum (Red maple)	D	1	**20.0**	25	18	Fair	19	Major sidewalk uplift. Recent sidewalk repair.
187	Acer rubrum (Red maple)	D	1	**20.2**	45	16	Fair	12	
177	Acer rubrum (Red maple)	D	1	**20.6**	40	17	Poor	21	Poor branching structure. Minor sidewalk uplift
137	Acer rubrum (Red maple)	D	1	**20.7**	35	26	Fair	19	Major sidewalk uplift
172	Acer rubrum (Red maple)	D	1	**21.3**	25	28	Good	23	Major sidewalk uplift
179	Acer rubrum (Red maple)	D	1	**21.8**	55	20	Fair	16	Girdling. Minor.
104	Acer rubrum (Red maple)	D	1	**21.9**	60	13	Fair	21	Co dom at 8 ft. Pavers.
180	Acer rubrum (Red maple)	D	1	**22.0**	60	21	Fair	20	Minor
101	Acer rubrum (Red maple)	D	1	**22.1**	50	21	Fair	22	Major surface roots uplifting sidewalk. Uncorrected lean over road
167	Acer rubrum (Red maple)	D	1	**22.3**	25	16	Fair	22	Major sidewalk uplift. Overhead utility line conflict.
188	Acer rubrum (Red maple)	D	1	**22.6**	45	21	Fair	17	
133	Acer rubrum (Red maple)	D	1	**23.0**	45	26	Fair	26	Co dom at 8 ft. Major sidewalk uplift.
174	Acer rubrum (Red maple)	D	1	**23.0**	45	27	Fair	25	Major sidewalk uplift
132	Acer rubrum (Red maple)	D	1	**23.2**	50	26	Fair	20	Major sidewalk uplift. Recent sidewalk repair. Right behind storm drain. Trunk taking up all space in planting strip
145	Acer rubrum (Red maple)	D	1	**24.2**	50	20	Good	23	Major sidewalk uplift
186	Acer rubrum (Red maple)	D	1	**25.3**	45	24	Fair	18	
182	Acer rubrum (Red maple)	D	1	**26.0**	60	17	Fair	41	Minor sidewalk uplift
223	Thuja plicata (Western red cedar)	E	2	**40.5**	70	14	Good	14	

Enclosure B: Annotated Tree Map



0 15 30 60 90 120 Feet


6006
19339
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19337
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19361
19373
19369
19415
19509
19521
19529
19523
19525
19501
19515
19527
Private Rd
Private Rd
61st Ave NE
61st Ave NE
19214
NE 193rd Pl
6102
19312
6103
NE 194th Pl
6113
6110
19502
19506
6115
NE 195th Pl
19522
19534
120
121
122
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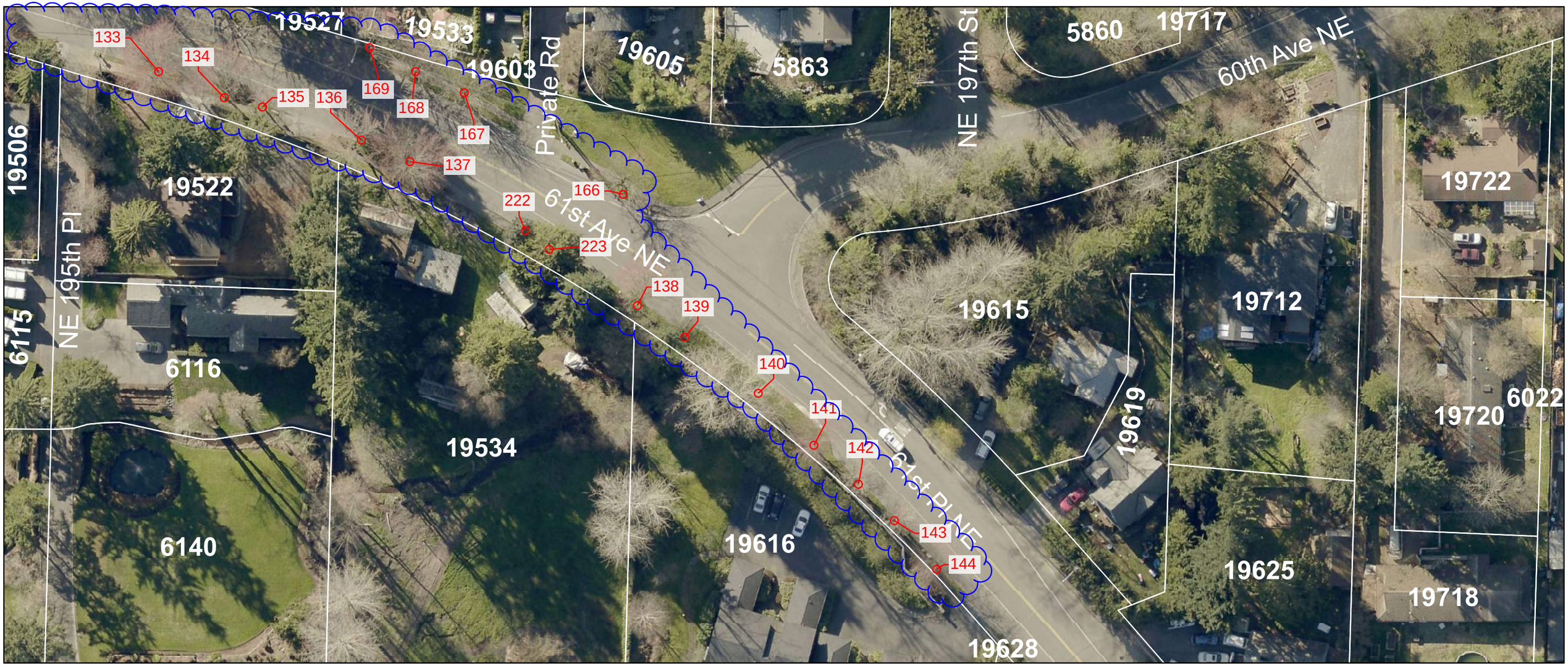
Feet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144
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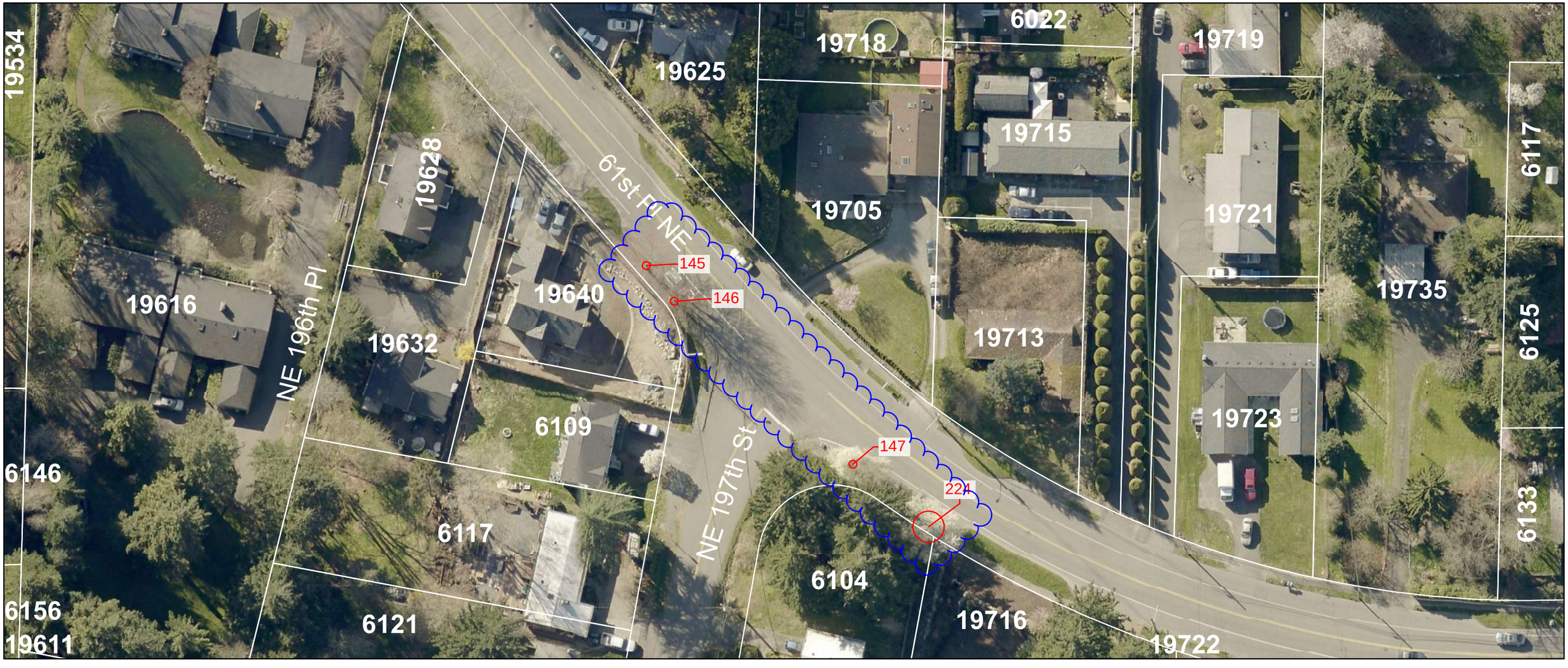
19603
19605
5863
5860
19717
19506
19522
19534
19615
19712
19722
19720
6022
6116
6115
6140
19616
19625
19718
19628
19619
Private Rd
NE 197th St
60th Ave NE
61st Ave NE
61st Pl NE
NE 195th Pl
0 15 30 60 90 120
Feet



0 15 30 60 90 120 Feet


19715
19719
19721
19723
19735
6125
6133
NE 200th St
20004
20010
20016
20022
20028
20034
20040
6132
148
149
150
151
165
164
163
162
161
160
159
61st Pl NE
English laurel is not tagged or included in inventory, typ.
Tree trunk on neighbor's property.
19716
19724
19732
19746
20004
20012
20020
20018
20219
19722
19736
20106
19803
19811
19819
0 15 30 60 90 120
Feet